

REMARKS

In the Office Action dated March 6, 2003, claims 4-21 are pending. Claims 6-20 are withdrawn from consideration as drawn to non-elected subject matter. Claims 4-5 and 21 are under consideration. Claims 4-5 and 21 are rejected under 35 U.S.C. §101 and §112, first paragraph. Claims 4-5 are rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support. Claims 4-5 and 21 are further rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to satisfy the written description requirement. Moreover, claims 4-5 and 21 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. Claims 4-5 and 21 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by Tuttle et al. (US Patent 5,477,002). Claims 4-5 and 21 are also rejected under 35 U.S.C. §102(b) as allegedly anticipated by Baszczynski et al. (US Patent 5,633,438).

This Response addresses each of the Examiner's rejections and objections. Applicants therefore respectfully submit that the present application is in condition for allowance. Favorable consideration of all pending claims is respectfully requested.

In the Office Action, the abstract of the application is objected to as not descriptive. Applicants are providing herewith a new abstract which is believed to be descriptive of the claimed invention. Withdrawal of the objection is therefore respectfully requested.

Claims 4-5 and 21 are rejected under 35 U.S.C. §101 and §112, first paragraph. The Examiner maintains that the claimed invention does not have a specific utility or a well-established utility. The Examiner maintains that, since the claimed invention is not supported by either a specific utility or a well-established utility, one skilled in the art would not know how to use the claimed invention.

Applicants previously submitted that the specification has asserted at least one specific utility or well-established utility of the claimed nucleic acid molecules. Specifically, the specification teaches that the claimed nucleic acid molecules are specifically expressed in male gametes, and therefore, the nucleic acid molecules and their corresponding promoters enable specific genetic manipulation of the male germ line including generating male sterile plants and facilitating male gamete-specific transposon tagging. The claimed male gamete-specific nucleic acid molecules (as well as their promoters) are useful in the production of hybrid plants in agricultural and horticultural industries.

However, the Examiner contends that the production of male sterile plants requires the use of the promoter of LGC1 (a non-elected embodiment), and is not specific to the elected nucleic acid molecule, SEQ ID NO: 3 (the LGC1 gene). In addition, the Examiner contends that male gamete specific transposon tagging via the LGC1 gene is not a specific utility, as utility requires knowledge of the function of the protein encoded by the LGC1 gene, which allegedly is not disclosed in the specification.

Applicants respectfully disagree with the Examiner. Applicants submit that the promoter is useful for *epigenetic* expression (i.e., expression of a transgene on a construct maintained separately to the genome) or for a randomly inserted construct. However, the elected nucleic acid molecule, SEQ ID NO: 3 (representing the LGC1 gene), has a specific utility of permitting specific genetic manipulation of the male germ line, including generating male sterile plants, independent of the promoter sequence. For example, this nucleic acid molecule can serve as a target sequence for the introduction of a transgene via homologous recombination, marker exchange mutagenesis or gene targeting. To introduce a transgene, a genetic construct can be made which contains a promoterless gene (i.e., the transgene) to be expressed in a male gamete-

specific manner. The transgene is flanked by sequences identical or homologous to certain regions of SEQ ID NO: 3 and can be introduced into a plant genome by means of homologous recombination between the flanking sequences in the vector and the corresponding regions of SEQ ID NO: 3 in genome. As a result of this integration, the transgene would be expressed only in the male gametes as described by the present invention. Examples of useful genes that may be inserted into SEQ ID NO: 3 would include, e.g., marker genes (antibiotic resistance genes GUS, GFP, among others), and genes encoding products toxic to the gamete, which may induce male sterility.

Accordingly, it is respectfully submitted that the claimed nucleic acid molecules are supported by at least one specific utility, which is asserted in the present specification and which is also apparent to those skilled in the art based on the instant disclosure. Given the present teaching, those skilled in the art would know how to use the claimed nucleic acid molecules. Therefore, it is respectfully submitted that the rejection under 35 U.S.C. §101 and §112, first paragraph, is overcome. Withdrawal of the rejection is respectfully requested.

Claims 4-5 are rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support.

More specifically, the Examiner contends that the specification, while enabling for nucleic acids that encode SEQ ID NO: 4, does not reasonably provide enablement for nucleic acids that either encode a protein with 90% identity to SEQ ID NO: 4, or derivatives of such nucleic acids.

By way of the instant amendment, Applicants have deleted the terms “90% identity” and “derivatives”. The nucleic acid molecules, as presently claimed, comprise certain specified nucleotide sequences or amino acid sequences encoded thereby. It is respectfully submitted that

claims 4-5, as presently recited, are fully enabled by the specification. Therefore, the rejection under the enablement requirement of 35 U.S.C. §112, first paragraph, is overcome. Withdrawal of the rejection is respectfully requested.

Claims 4-5 and 21 are further rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to satisfy the written description requirement.

It is respectfully submitted that the nucleic acid molecules, as presently claimed, are characterized by certain specified nucleotide sequences or amino acid sequences encoded thereby. It is respectfully submitted that claims 4-5 and 21 fully satisfy the written description requirement of 35 U.S.C. §112, first paragraph. Accordingly, the rejection under the written description requirement of 35 U.S.C. §112, first paragraph, is overcome. Withdrawal of the rejection is respectfully requested.

Claims 4-5 and 21 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. Specifically, the Examiner objects to the term "derivative" recited in claim 4, the term "low stringency conditions" recited in claim 5, and the term "lily or a related plant" recited in claim 21.

It is respectfully submitted that claims 4-5 and 21, as presently amended, do not include the terms objected to by the Examiner. As such, the rejection of claims 4-5 and 21 under 35 U.S.C. §112, second paragraph, is overcome. Withdrawal of the rejection is therefore respectfully requested.

Claims 4-5 and 21 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by Tuttle et al. (US Patent 5,477,002).

Applicants respectfully submit that Tuttle et al. do not teach the nucleic acid molecules, as presently claimed, which are characterized by certain specified nucleotide

sequences or amino acid sequences encoded thereby. Therefore, the rejection under 35 U.S.C. §102(b) based on Tuttle et al. is overcome. Withdrawal of the rejection is respectfully requested.

Claims 4-5 and 21 are also rejected under 35 U.S.C. §102(b) as allegedly anticipated by Baszczyński et al. (US Patent 5,633,438).

Applicants respectfully submit that Baszczyński et al. do not teach the nucleic acid molecules, as presently claimed, which are characterized by certain specified nucleotide sequences or the amino acid sequences encoded thereby. Therefore, the rejection under 35 U.S.C. §102(b) based on Baszczyński et al. is overcome. Withdrawal of the rejection is respectfully requested.

In view of the foregoing amendments and remarks, it is firmly believed that the subject application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



Frank S. DiGiglio
Registration No. 31,346

SCULLY, SCOTT, MURPHY & PRESSER
400 Garden City Plaza
Garden City, New York 11530
(516) 742-4343
FSD/XZ:ab

Enc.: New Abstract.